Module 2

Indoor Air Quality Tools for Schools

Key Messages of Today's Session

- **Indoor Air Quality (IAQ) is important.**
- **IAQ is an important issue for schools.**
- **You can implement an IAQ Program in your school.**
- **The IAQ Coordinator's role is key.**
- ***IAQ Tools for Schools* provides the help you need.**
- **Implementing *IAQ Tools for Schools* is a team effort.**

Workshop Objectives

- **You will be able to:**
  - **Describe the effects of poor IAQ in schools**
  - **Identify IAQ needs in your school**
  - **Identify and overcome potential barriers**
  - **Build a core team for IAQ implementation**
  - **Activate the IAQ Management Plan**
  - **Implement the IAQ Management Plan**

Introductions

- Name
- School District Represented
- Position
- Previous Experience with Air Quality Issues
- Causes and Effects of Poor IAQ

What is Indoor Air Quality?

in·door (in′dôr′) *adj.* **air** (er,ar) *n.* **quality** (kwŏ′i′tē) *n.*

1. the temperature, humidity, ventilation, and chemical or biological contaminants of the air inside a building.

Americans spend about 90% of their day indoors- in classrooms, in offices, at home. Pollution indoors is two to five times- and occasionally more than 100 times- higher than outdoor levels.

When compared to other threats to human health, EPA, its Science Advisory Board and others consistently rank indoor air pollution among the top four environmental risks facing the American people.

Potential Causes of Poor Air Quality

- Reduced Ventilation
- Building Materials and Furnishings
- Deferred Maintenance to Save Money
- Pesticides, Housekeeping Supplies, School Supplies, and Chemicals in Personal Care Products

Indoor Air Pollutant Sources

- Building Materials and Furnishings
- Maintenance Products
- Office Equipment
- Microbiological Contamination
- Outdoor Air Pollution
- Soil Gases (e.g., Radon)
- Occupants

Common HVAC System Problems

- Insufficient Outdoor Air Supply
- Controls Broken or Disconnected
- Dirty Filters
- Microbiological Growth in Drip Pans, Ductwork, Coils, and Humidifiers
- Improper Operation and/or Maintenance

Ways Occupants Contribute to Poor IAQ

- Bacteria and Viruses
- Improper Use of Products and Equipment
- Disabling or Blocking Ventilation Systems
- Personal Care Products
- Pets in Classrooms
- Tobacco Smoke

Consequences of Poor IAQ

- Health Problems
- Reduced Learning and Productivity
- Higher Costs to Fix Problems than to Prevent
- Poor Public Relations
- Liability Issues

Additional Potential Costs

- Negative Media Coverage
- Angry or Frightened Parents, Staff, and Public
- Increased Risk of Legal Action by Unions or Parents
- Accountability to School Board and Other Officials

Teachers at Arlington School Link Ailments to Renovations

Poor Ventilation May Be Contributing to Problems, Officials Say

By Stephanie Griffith
Washington Post Staff Writer

More than two dozen teachers at Arlington's Kenmore Middle School are blaming renovations that began 18 months ago at the 1950s-vintage school for a variety of physical problems they have suffered, including fatigue, nausea and miscarriages.

miscarriages among school staff members since work began, but he doubted ventilation problems have caused them.

The renovations at Kenmore are part of a six-year, $72 million project that will touch nearly every county school before its completion in 1998.

School officials said poor ventilation

that new testing for airborne chemicals be undertaken. School officials said they would review those requests.

"A person who comes to work ought to be able to work in conditions that are satisfactory," Cohen said.

School Board members said they have not yet seen the report of the

ıot Ledger

March 17, 1993 City Edition

ue, she says

ly a total $5,000 in real estate taxes
1992 and 1993 and water and sewer
ges from 1991 and 1992 on their
leberry Lane home.
plebaum called a press conference
rday to explain why she and her
and have not paid real estate taxes in
years. She accused FitzGibbons of
tical blackmail" for threatening to
public that she is a tax delinquent

Please see TAXES — Page 14

Mouse dies from air in classroom

Duxbury school tested

RADING
ARDS: HOT
EW FAD

SPORTS

ODU: ON TO ROUND 2
TAR-HEELED: ECU HUNG ON FOR A HALF
STUNNER: 2ND SEED ARIZONA OUSTED

ENTERTAINMENT

TENDER BUT
TOUGH: REBA
MCENTIRE

THE LEDGER-STAR

19, 1993 © The Ledger-Star HAMPTON ROADS' ONLY AFTERNOON NEWSPAPER 118th Year, No. 6 FIN 50 CE

■ HEADLINES ■

Court's Justice White
tedly ready to retire

Court Justice Byron R. White was to announce his retirement today, resident Clinton an early opportunity his first appointment to the nation's ourt, The Associated Press has The effective date of White's resig- as not known; the current term of ends in late June or early July. ffice refused to comment. White has the bench for 31 years.

ers say Woody Allen
t abuse adopted child

After hearing a long-awaited report that concluded he did not sexually abuse his adopted daughter, Woody Allen emerged

Classroom air may hurt learning

More polluted than outdoors

By Lawrence L. Knutson
Associated Press

WASHINGTON — Attention teachers: The air in your classroom may be far more polluted than it is outside, posing a hazard both to health and the ability to learn.

The Environmental Protection Agency says levels of school air pollutants may be two to fi times — and occasionally 10 times — higher than outdoor levels.

In a report to a House Commerce subcommittee on health, the EPA said Thursday a survey of hundreds of schools across the country showed high levels of carbon dioxide, unacceptable levels of the radioactive gas radon, and frequent occurrences of mold, fungi, mildew and volatile organic chemicals in classroom air.

Margo T. Oge, director of the EPA's Office of Radiation and Indoor Air, said preliminary investigations show "there is cause for concern about the indoor air quality of our schools."

"This situation may compromise our children's health and their ability to learn," she said.

She said indoor air pollution has increased over the past several decades, in part, because of the construction of more tightly sealed buildings, the use of synthetic building materials, and the increased use of chemicals.

Pollution is compounded in schools by the chem cals and toxic materials used in science labs, art rooms and vocational training work spaces, she said.

She said indoor air pollution can cause serious long-term health risks such as lung disease and cancer, and such short-term problems as asthma.

She said indoor pollution can bring on such symptoms as dry or burning eyes, noses and throats, sneezing, stuffy or runny noses, fatigue, lethargy and forgetfulness.

WHAT TO DO?

Schools can take steps improve the quality of their indoor air, an EP expert says:

- Remove potential sou of contaminants such as moldy carpets.
- Check heating, ventila and air conditioning syst to ensure adequate ventilation.

BEHIND THE FRONT LINES: INSIDE AN ANTI-ABORTION BOOT CAMP

Big citi
aren't t

Complaints pour in about bad school air

BOSTON (AP) – The air inside Massachusetts school buildings can be a major threat to the health of children because of pollutants such as radon and asbestos, researchers say.

The Massachusetts Department of Public Health's Bureau of Environmental Health Assessment has investigated 33 school air-quality complaints in the last 11 months. Department officials said air-quality investigations have been requested in 43 other districts.

"There has not been one area of the state that we have not been to," bureau director Suzanne Condon said.

"We are seeing a big increase in the number of calls we've received about air quality in schools – particularly about elementary schools," Condon said.

U.S. Environmental Protection Agency studies of air quality in schools estimate that one in five American schools may have unsafe levels of radon, one in three pose asbestos risks and thousands more may contain other pollutants – including exhaust fumes, biological agents such as mold and chemical contaminants.

▼

'There has not been one area of the state that we have not been to'

Suzanne Condon
State health official

▲

Doctors say the risks from exposure to the bad air range from minor problems interfering with learning, such as hyperactivity and fatigue, to life-threatening diseases, such as cancer and asthma.

This past year, classrooms in a Carver elementary school were permanently closed due to air quality problems, Dracut had to replace the entire roof at a school with an unusual incidence of viruses and West Bridgewater closed down a school building plagued by intractable air-quality problems.

Regional EPA officials said last week that Massachusetts residents have placed the second-highest number of calls to the agency's Indoor Air Quality Clearinghouse hot line for complaints about school air quality problems rapidly increasing.

EPA studies indicate school populations may be particularly susceptible to indoor air-pollution risks because children are more vulnerable to lower levels of contaminant exposure than adults; schools use heating, ventilating and air conditioning systems that require careful inspection and maintenance to ensure air quality; and the variety of chemicals used in cleaning products, building materials, carpets and furnishings has increased.

The Indoor Air Quality Act, introduced in April by U.S. Rep. Joseph P. Kennedy 2nd, would provide $47 million a year to research, publicize and combat indoor air pollution. Backed by the Clinton administration, the bill also calls for a first-ever national program to assess air quality at schools, day-care centers and federal buildings.

Phils score another sweep
Quantrill goes 7⅓ innings as Astros fall in Houston. **Sports Extra.**

Honoring Montco police
New Norristown site remembers 22 who died. **Neighbors.**

Northern Suburbs Edition

The Philadelphia Inquirer

Monday, May 15, 1995 — 60 cents outside the eight-county Philadelphia metropolitan area **35 Cents**

n area schools, many long for a breath of fresh air

ldren are getting sick, parents say. Administrators share the tration. For several irritants, federal standards do not exist.

By Jere Downs
INQUIRER STAFF WRITER

en the school nurse called Debi Seibert all to alert her that her son was turning Seibert became suspicious. At baseball s or at home, Kevin, 12, was fine. But an hour in class at Shamona Creek entary School, his chest tightened. am freaked," Seibert told officials at a Downingtown school board meeting Wednesday night. "I can't afford private school."

School officials, too, are frustrated. Although no one is sure what is causing Kevin Seibert's difficulties, Downingtown educators realize that the boy's school — like many others in the United States — is beset by a host of air-quality problems.

After a consultant pointed out excessive carbon-dioxide levels at Shamona, more fresh air was pumped in. But the source of a pungent, irritating odor in a kindergarten classroom remains unknown. And parents and school officials are still arguing over whether mold caused by a leaky roof is also unhealthy.

The government is little help: There are no government regulations that set acceptable levels of mold, carbon dioxide and bacteria in the air, leaving only an increasingly emotional debate between worried parents and school officials.

"If the government would only set standards, then I could meet those and satisfy these parents," said Kevin Campbell, facilities engineer for the school district in Downingtown. "We're doing the very best we can."

Increasingly, variations on the Shamona Creek controversy are being played out in school districts nationwide. Air quality is the coming environmental issue for many school districts, just as asbestos was years ago. Today, parents and teachers are complaining that the very air within school walls may pose health hazards to children.

Nationwide, one in five schools has experienced trouble with air quality due to inadequate ventilation, said Bob Thompson, author of a soon-to-be-published clean-air manual for schools sponsored by the Environmental Protection Agency. In one in four schools, air is dirtier than it should be because of poor maintenance — mostly the failure to replace air filters and to clean air-handling equipment, he said.

"I hate to use the word *ignorance*," Thompson said. "Some schools are so unaware, and the fixes can be very simple."

But it's also true that lack of money has forced schools to defer maintenance nation-

See **SCHOOL AIR** on A4

Portsmouth/

Ports. elementary school to be recognized today by EPA

By JEANNINE R. DINGMAN
Democrat Staff Writer

PORTSMOUTH — The efforts of a team of individuals to improve the

respiratory problems and lethargy promoted Portsmouth school officials to authorize a study of Little Harbour's air quality last year,

late 1960's as an open concept school.

A number of walls have been installed since that time without an

Schools map out clean-air pl

e project will begin with Streiber Elementary and Chicopee gh next month and will include all 15 in the city.

By TED LaBORDE
Staff writer

CHICOPEE — The School Department will launch an air-quality study this week to ensure that schools are clean

James Stefanik said yesterday the purpose of the study is to "ensure there is quality air in our school buildings, and that involves an inspection of each and every room by everyone

Nancy Dulchinos, and by Liz Wheeler and Michael Muldoon, who represent cafeteria and maintenance workers respectively.

Simard said initial checklists will be distributed to all staff at Streiber Schools this week, and complet

or vocational educa and locker rooms.

Stefanik said there expense or renovatio and ventilating syste in this effort to imp quality.

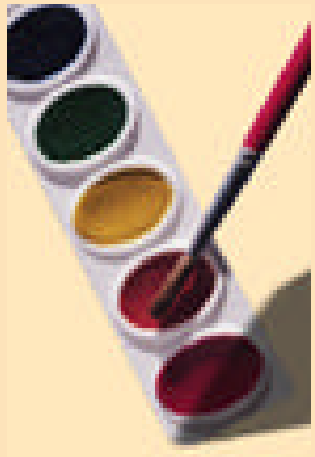
"The

Air Quality Becomes Scholastic Focal Point

kit, which includes checklists questionnaires endorsed by ental Pro

Unique Aspects of Schools

- Budgets are Tight
- Space is Densely Populated
- Buildings May be Old and Suffer from Deferred Maintenance
- Special Sources of Pollution and Odors
- Space Utilization
- Additions and Temporary Space



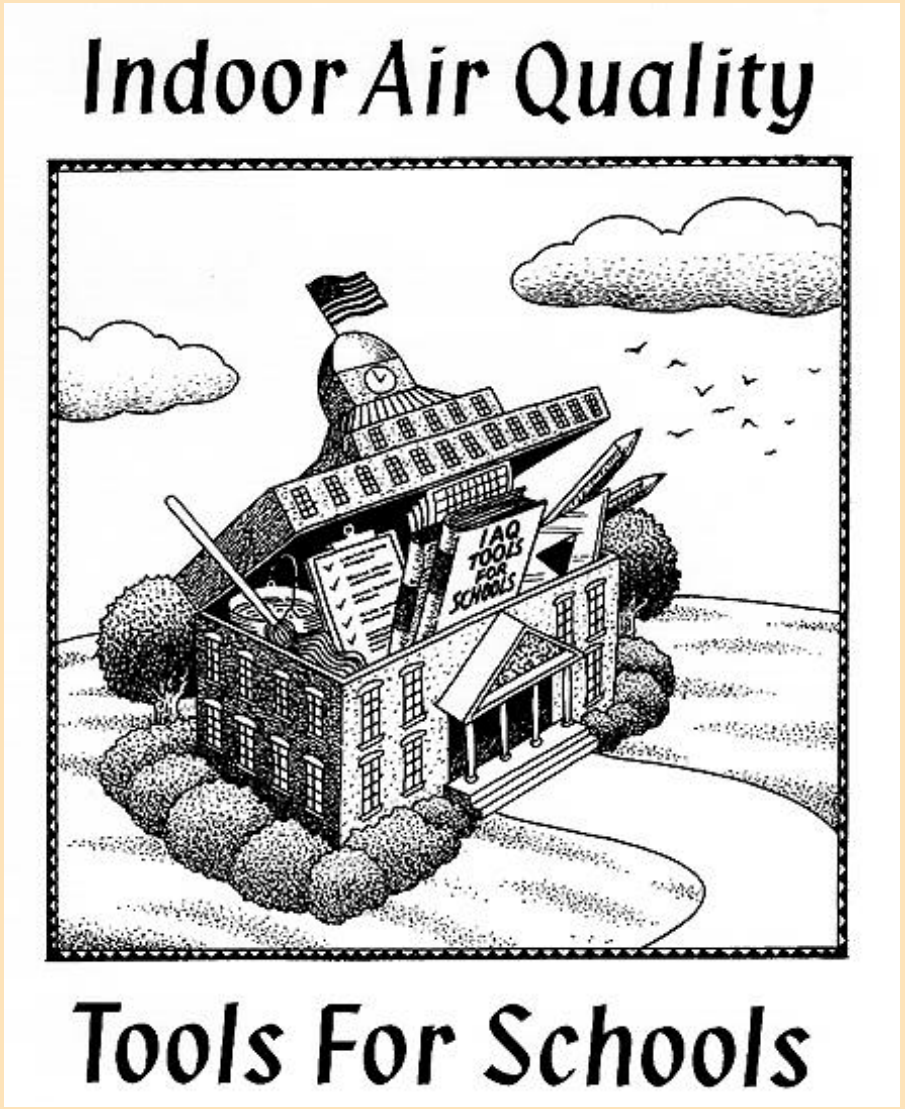
Effects of Poor IAQ on Children's Health

- Indoor air pollution can affect children's learning ability
- Asthma episodes can be triggered by allergens or odors indoors
- Some pollutant harm may be long-lasting or permanent

IAQ Tools for Schools

Key Features

- **Low Cost/ No Cost**
- **Adaptable to Individual School Needs**
- **No Specialized Training Required**
- **Voluntary**
- **Common Sense Approach**



IAQ Tools for Schools

Kit Co-Sponsors

U.S. Environmental Protection Agency

Council for American Private Education

American Federation of Teachers

National Education Association

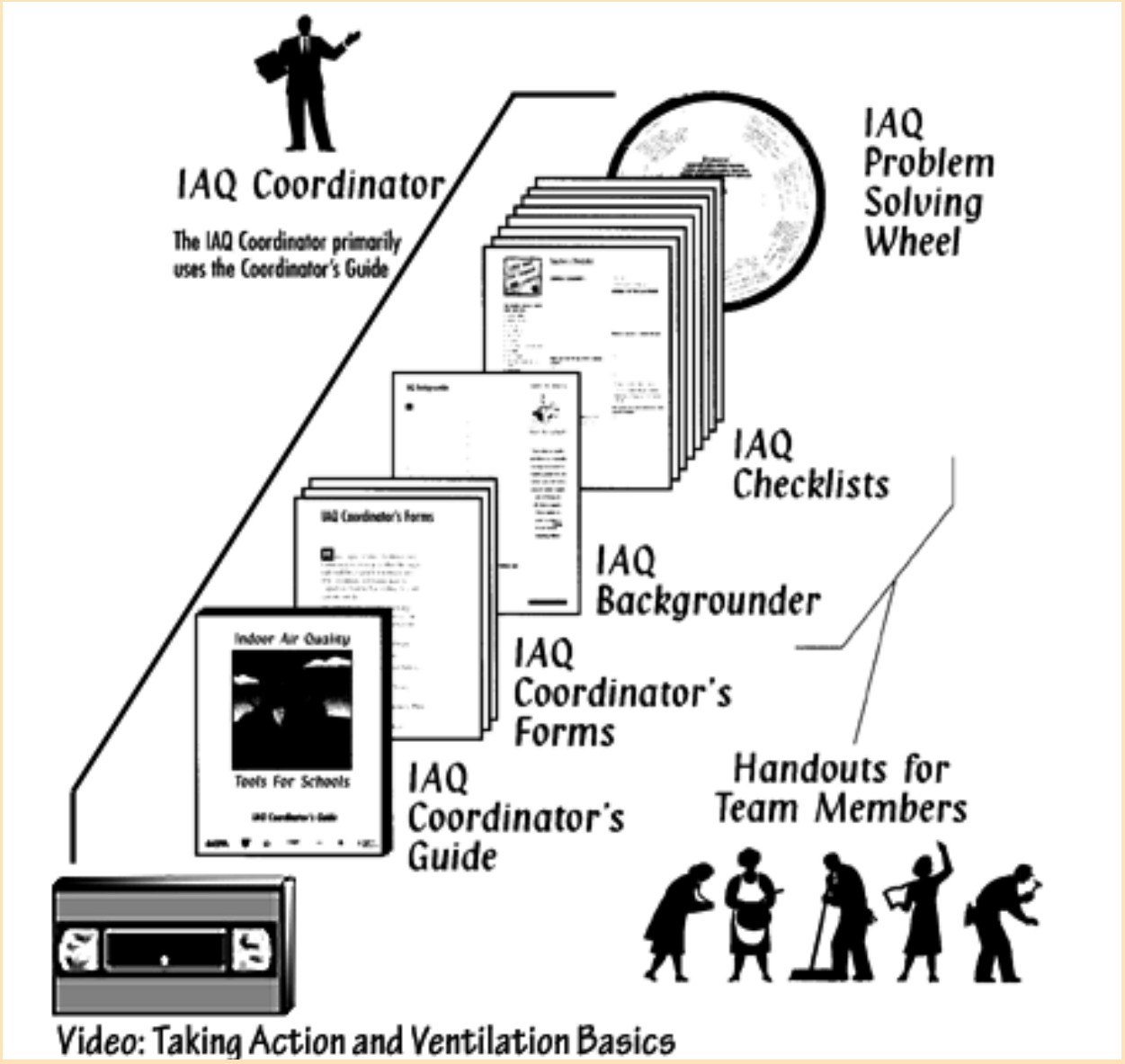
Association of School Business Officials

National Parent Teacher Association

American Lung Association

Purposes of the Kit

- Helps People Easily Diagnose IAQ Problems in Schools
- Simplifies the Process for Maintaining Good IAQ
- Prevents Loss of Dollars and Trust



Role of IAQ Coordinator

- Disseminates IAQ Information
- Creates and Coordinates IAQ Team
- Implements IAQ Management Plan
- Coordinates IAQ Activities
- Communicates to All Constituents
- Facilitates Resolution of IAQ Problems

Ventilation Checklist

This checklist discusses eight major topic areas:

- Outdoor Air Intakes
- System Cleanliness
- System Controls
- Air Distribution
- Exhaust Systems
- Quantity of Outdoor Air
- Adequacy of Outdoor Air Supply
- How to Measure Airflow

Instructions:

1. Read the *IAQ Backgrounder*.
2. Make one copy of the Ventilation Log for each ventilation unit in your school.
3. Complete each activity for each ventilation unit and note the status of each activity on the Ventilation Log.
4. Return the Ventilation Logs to the IAQ Coordinator and keep copies for future reference.

Name _____

School _____

Date Completed _____

Signature _____

Schools use a variety of methods for ventilating the building with outdoor air: 1) mechanically-based systems such as unit ventilators, central HVAC systems, and central exhaust systems, and 2) passive systems that rely on operable windows, air leaks, wind, and the stack effect (the tendency of warm

10. Check Clocks, Timers, and Seasonal Switches

- ❑ Confirm that summer-winter switches are in the right position
- ❑ Confirm that time clocks read the correct time
- ❑ Confirm that time clock settings fit the actual schedule of building use (night/weekend set-back and set-up)

tools, but Activity 22 will require airflow measurement equipment that you may not have. The section *How to Measure Airflow*, at the back of this Checklist, describes the type of equipment used to measure airflow. The IAQ Coordinator has information on how this equipment can be obtained (*Appendix B*). Make an effort to obtain this equipment before conducting Activity 17. Supplying an adequate amount of outdoor air to an occupied area is necessary for good indoor air quality, and measuring airflow can only be done correctly with equipment that can reliably tell you if you're getting the proper amount of outdoor air (visual inspection or feeling for air movement is not sufficient).

Activities 17-21 can be applied to passive ventilation systems. For activities that do not apply, place a "NA" in the date column of the Ventilation Log.

Your school most likely has multiple units and systems, so be sure to perform the activities and complete the Ventilation Log for each unit. The …es are listed in a purposeful …o prevent having to repeat …es for a given unit as the …ion progresses. The following …ommended process for saving … performing the activities:

…s 1-3

… these activities for all outdoor …es while outside the building, …k the results on the Venti… Log for each unit.

…s 4-12

… these activities as a set on …ntilation unit while you're in …m and the unit is open.

Activities 13-16

Perform these ventilation control system activities as required by your situation.

Activities 17-21

Perform these air distribution and exhaust system activities as required by your situation.

Activities 22-23

Perform these activities regarding the quantity of outdoor air on all units while you have the airflow measurement equipment available.

Roles of IAQ Coordinator

- **Leader**
  - Develops Vision
  - Sets Direction
  - Strategizes for Change
  - Communicates Direction
  - Motivates and Inspires
  - Leads by Example
- **Manager**
  - Plans
  - Budgets
  - Organizes
  - Controls
  - Solves Problems
  - Makes Decisions
  - Allocates Resources

Action Packet Users/ Team Members

Teachers

Administrative Staff

Facilities Operators

Action Packet Users/ Team Members

School Boards

Health Officers

Custodians

Action Packet Users/ Team Members

Contract Service Providers

Students & Parents

Local News Media

Activate IAQ Management Plan

Top Administrative Support

Radon

Integrated Pest Management

Lead

IAQ Coordinator

- Checklist Interval
- Plan for Emergency Response
- Inform Constituents
- IAQ Policies

The IAQ Management Plan

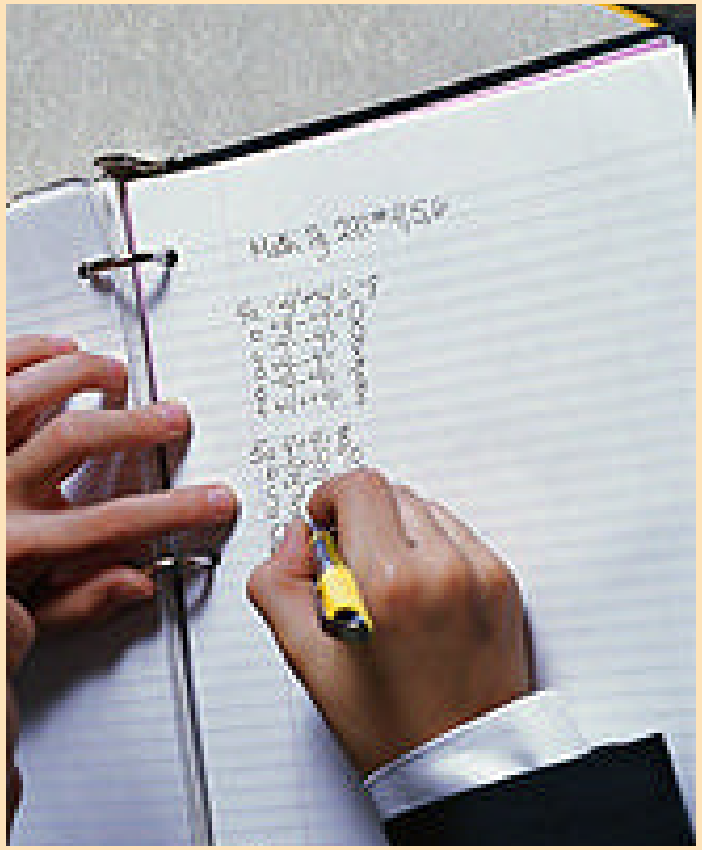
- Assess Current Status
  - Start the Checklists Log
  - Activate the IAQ Team (Action Packets)
  - Receive and summarize checklists
  - Perform walkthrough inspection
  - Assess radon status
  - Assess pest control programs
  - Assess lead status
  - Identify recent changes that affect IAQ

The IAQ Management Plan

- Perform Repairs and Upgrades
  - Set repair and upgrade priorities
  - Gain consensus and approvals
  - Distribute status report
  - Perform repairs and upgrades
  - Conduct follow-up inspections

The IAQ Management Plan

- **Final Steps**
  - **Develop a schedule of IAQ Events**
  - **Assess problem-solving performance**
  - **Establish and update IAQ policies**
  - **Distribute Summary Report**
  - **Check Contacts List**
  - **File *Checklists*, reports and notes**



Response to Emergencies

- Identify Emergency
- Diagnose, if Necessary
- Assess Severity
- Decide on Solution
- Hire Outside Help, if Necessary
- Resolve Problem
- Communicate Throughout the Process

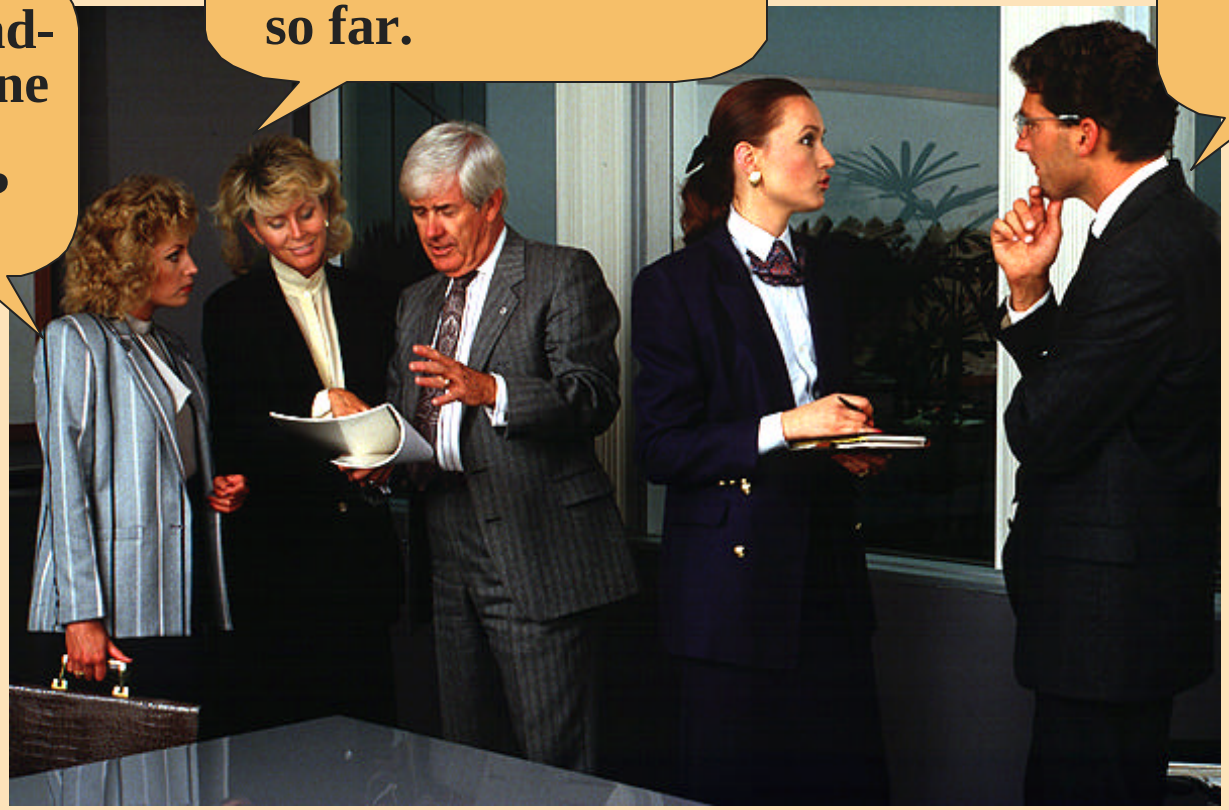
Communication

We got his approval. on all completed work..

Yes, he said it was only acceptable, so far.

I am so glad he liked it.

So, he is extend-ing the deadline to improve the materials?



The client said, *"The materials have been acceptable to date."*

Communication Strategies

- **Building Awareness of IAQ in your School**
- **Encouraging Participation by Faculty and Staff**
- **Managing Public Relations- with Outside Stakeholders**
- **“Managing Up”- Getting Top Support**
- **Communicating in a Crisis- *“Do’s* and *Don’ts”***